3.0 CULTURAL OVERVIEW

This section of the report provides detailed cultural contexts for prehistoric (Section 3.1), ethnohistoric (Section 3.2), and historical (Section 3.3) resources for the pipeline Project. The narratives are organized by region (see Section 2.0). The overviews provide a context for evaluating the significance of aboriginal and historical components identified during fieldwork. A summary of research results (Section 3.4) describes previous cultural studies and known site distributions within the pipeline project research corridor. The research area is a two-mile-wide corridor centered on the proposed pipeline route.

3.1 Prehistory

Vast differences in geomorphology, hydrology, and climate characterize the state of Washington. The Washington State Office of Archaeology and Historic Preservation (OAHP) has sponsored the development of several Resource Protection Planning Process Documents (RP3 documents) designed to partition the state by county into "study units", thereby reducing the area within which cultural resources may be described. These documents are useful for summarizing previous investigations and the current state of our knowledge of the prehistory of each region. Since they are based on political units, however, most RP3 study units crosscut a number of different geologic and physiographic provinces. For example, the Northern Puget Sound Study Unit includes portions of the Puget Basin, and the West Cascades (Blukis Onat 1987). As is evident in the RP3 documents for each study unit, the diversity of environmental zones, even within individual study units, has greatly affected the history of archaeological research and consequently, our understanding of Washington's past. There are, however, certain historical consistencies in methodology and research biases that can be mentioned at this juncture to enable the reader to evaluate the reviews that follow on a more general level.

In each study unit, our knowledge of that area's prehistory is limited by a general bias in the environmental zones investigated. The areas that are most visible, most accessible, and usually closest to major water sources have received the most attention. High elevation and heavily vegetated areas away from major water courses and population centers have been virtually ignored for most of the history of archaeological investigation in Washington. Investigation of upland mountainous regions is still inhibited by difficult working conditions, inaccessibility, thick vegetation, unstable slopes, and poor preservation conditions. By the same token, geologic processes such as changes in sea level, stream erosion, and sediment deposition may preferentially destroy or conceal particular kinds of sites and contribute to our emphasis on other, more visible categories of archaeological remains.

A related source of bias is the predominance of judgmental sampling. In part due to an emphasis on identifying village locations mentioned in the ethnographic and ethnohistoric literature, archaeologists have tended to look for sites only in areas where they expected to find them. This practice has led to a biased,

synchronic view of the past and limits our knowledge of the range of variability that characterizes the archaeological record. While this situation has changed somewhat as archaeologists branch out spatially (e.g., Landis and Lothson 1982; Lewarch 1978; Mierendorf 1986, 1993) and begin to sample space systematically, the biases still remain.

Another bias symptomatic of work in all study units is the lack of problem-oriented research. Much of the archaeology conducted in Washington over the past 25 years has taken the form of cultural resource inventories conducted in small, widely scattered areas. Most cultural resource management (CRM) projects in Washington State have not been structured around a cohesive set of research questions (Campbell 1981) and the majority of these projects are constrained by spatial requirements and time limitations. Thus, the majority of archaeological investigations have not contributed to a cumulative body of knowledge about the prehistory of Washington State.

Archaeologists have nevertheless produced general chronological sequences for each study unit that range from the late Pleistocene/early Holocene through historic times. These sequences are discussed below in individual overviews for each region and corresponding study units.

In sum, vagaries in preservation of organic remains and in preservation of certain kinds of sites due to geologic processes, a paucity of radiocarbon dates and complete occupational sequences, and survey and recovery biases are problems that plague the interpretive sequences advanced for each study unit. The overviews below are presented without extensive additional reference to these problems. However, two other cautionary notes warrant mention: these overviews are summarized primarily from RP3 documents written by different archaeologists and thus vary substantially in level of detail and interpretation, and their application to the pipeline Project is based on a large-scale, regional approach.

Puget Basin

In the Puget Basin, the pipeline crosses the northern portion of the Southern Puget Sound Study Unit. Much of the archaeological research completed in the Southern Puget Sound Study Unit to date has focused primarily on coastal and lowland zones. The vast majority of the work has been small-scale reconnaissance and mitigation projects related to road construction, real estate development, timber sales, transmission line and pipeline corridors, and hydroelectric projects. Corresponding archaeological research in the western Washington uplands is increasing, but our knowledge of these areas still lags far behind.

The primary factors affecting site discovery probabilities, and therefore the known distribution of sites, are prehistoric site distribution, cultural resource management emphasis, and site visibility. For example, coastal shell middens are composed predominantly of shell (making them highly visible with respect to surrounding deposits), are typically found eroding from wave-cut embankments, and are easily accessible. As a consequence, coastal sites have long been a focus of archaeological investigation, and are

perhaps overrepresented in frequency relative to interior, riverine, or upland sites.

A total of 325 archaeological surveys had been conducted in the Southern Puget Sound Study Unit as of 1987. Archaeologists recorded 299 prehistoric sites in this region (Wessen and Stilson 1987), categorized into four descriptive types based on their content and geological context: shell middens, wet sites, lithic sites, and rock shelters (Wessen and Stilson 1987:13-16). Given the high visibility of shell middens, it is not surprising that these should constitute the most common site type, comprising 75 percent of all recorded sites in the region.

Lithic scatters, which are found in both coastal and inland zones, are the next most frequent site type, comprising 23 percent of the recorded sites. While these sites are numerous, the paucity of occupation-related remains at these sites limits archaeological knowledge of subsistence patterns and development of a cultural chronology. Yet knowledge of the region's prehistory is built primarily on data recovered from shell middens and lithic scatters Information regarding other aspects of the cultural adaptation and how they are interrelated is limited. Consequently, there presently exists no comprehensive synthesis of regional chronology, subsistence and trading systems, and cultural dynamics for the region as a whole.

The cultural sequence that has been derived from this framework is usually divided into three developmental periods, based on the chronology devised by Kidd (1964) shown in Table 3-1. These divisions are arbitrary (Campbell 1981) and should not necessarily be assumed to be correlated with adaptational shifts in the aboriginal settlement and subsistence systems. The "current" portion of Table 3-1 reflects an evolution of views over the past three decades.

The early view expressed by Kidd (1964) of a basic trend from simple societies relying on generalized hunting and gathering in the Early Period, to increasing social complexity and specialized reliance on aquatic resources in later times is probably a vast oversimplification. Kidd's chronology reflects a lack of consideration of geologic processes and the interaction of such forces with the archaeological record. Data about site formation and processes such as sea level change are just recently being integrated into archaeological research to provide a more complete understanding of the record.

For example, early lowland sites that indicate a dependence on marine resources are likely to have been inundated by rising sea levels (Whittaker and Stein 1992; Stright 1990). Consequently, remaining late Pleistocene/Early Holocene sites would be those located in non-littoral, inland contexts that represent only part of the total subsistence system. Later sites, however, would still be visible along the modern shorelines. Wessen and Stilson (1987) have suggested that the relative abundance of shell middens datable to within the past 1,500 years, and the corresponding lack of older middens is likely attributable to rising sea levels and erosional processes.

Thus, the apparent increasing dependence on marine resources over time may reflect nothing more than preservation bias, changing distributions of resources, geological processes preferentially obscuring shoreline sites, or a combination of these factors. The regional cultural sequence should therefore be regarded as a general framework for further research, and should be refined and elaborated upon as our knowledge of the archaeological record and its formation increases.

Table 3-1 Models of Prehistoric Change in the Puget Basin (from Wessen and Stilson 1987:Table 6).

Research Issue	Early Period 8000-5000 B.P.	Middle Period 5000-1000 B.P.	Late Period 1000-250 B.P.
Kidd (1964)			
Land Use	generalized marine littoral and major rivers	modern shores, islands	ethnographically described: saltwater shores and rivers
Settlement	small seasonal occupation areas	seasonal village, camps	winter villages, seasonal camps
Subsistence	generalized hunting and gathering	increased specialization	specialized seasonal collectors
Technology	large stone tools, lanceolate points	stone grinding, bone and antler tools, small side-notched and triangular points	emphasis on bone and antler tools, decrease in stone tool use, small side-notched and triangular points
Current			
Land Use	aquatic/littoral	aquatic/littoral	aquatic/littoral
Settlement	seasonal camps	seasonal village	winter village and seasonal camps
Subsistence	aquatic foragers	increasingly marine/ riverine orientation	specialized seasonal collectors
Technology	stone; some bone and antler; perishable items likely	stone; increase in bone, antler, and perishable items	stone, bone, antler, and perishable items common

West Cascades

The West Cascades segment of the pipeline is contained within the upland areas of the Northern Puget Sound Study Unit. A total of 255 archaeological surveys had been conducted in the Northern Puget Sound Study Unit prior to 1987 (Blukis Onat 1987:25). Although highly variable in nature, Blukis Onat (1987) identifies three categories of previous archaeological work in the study unit: 1) small-scale CRM reconnaissance and mitigation projects (e.g., Griffin 1983; Robinson 1985); 2) large-scale CRM surveys (e.g., Holley and Ramenofsky 1979; Wessen 1986); and 3) academic-oriented regional studies (e.g., Thompson 1978). The vast majority of the work has been small-scale reconnaissance and mitigation projects associated with road construction, real estate development, timber sales, transmission line and pipeline corridors, and hydroelectric projects.

Primarily generated by CRM, archaeologists had recorded a total of 751 sites in the Northern Puget Sound Study Unit as of 1987 (Blukis Onat 1987:22). The primary factors affecting site discovery

probabilities, and therefore the known distribution of sites, are prehistoric site distribution, CRM emphasis, and site visibility. In part to assess this bias, Blukis Onat (1987:22) has classified these sites into two categories, shell midden sites and non-shell midden sites. Shell middens constitute the vast majority of aboriginal sites in the Northern Puget Sound Study Unit. Although relatively few studies

have focused on inland, foothill, or mountain regions in the past, this situation has begun to change in recent years (e.g., Mierendorf 1986, 1993).

Due to the inherent difficulties of working in the interior, the relative visibility of shell-bearing sites, and the resulting investigatory bias, a cultural sequence had not previously been established for this study unit. In an attempt to remedy this situation, Blukis Onat (1987) developed a cultural sequence for the region that incorporates the interior, including the western flank of the Cascades. The chronology, presented in Table 3-2, is based on evidence of increased resource specialization, suggesting a shift from a generalized to a specialized subsistence pattern.

While Blukis Onat's chronology rightly attempts to incorporate inland as well as coastal areas of the study unit, it is important to note that a paucity of radiocarbon dates, complex geologic processes of erosion, non-systematic coverage of the landscape due to high vegetation cover, and difficult access are all factors that have yet to be overcome. Consequently, the sequence should be regarded as tentative until additional archaeological data can be provided for the inland, higher elevation areas of the study unit.

East Cascades

On the eastern side of the Cascades, the pipeline passes through the northern portion of the South Cascades Study Unit. The RP3 document for the South Cascades (Stilson 1988) reports 759 prehistoric archaeological sites recorded in this Study Unit as of 1988. The author consulted five different agencies

Table 3-2 Generalized Chronological Model of Northern Puget Sound Cultural Development (from Blukis Onat 1987:17-19).

Years B.P.	Description of Cultural Development
250-	**Cultural Conflict — Euroamerican Contact**. Indicated by the presence of trade goods of foreign manufacture and prehistoric artifacts. European diseases decimated populations of Native Americans, disrupting traditional lifeways and altering material culture. Archaeological record is poorly documented.
2500-250	**Specialized Resource Management**. Intensive use of both freshwater and anadromous species of fish; hunting and gathering; intensive use of shellfish. Sites consist mainly of shell middens. Artifacts of this period are indicative of a well-developed maritime-adapted culture and include toggling harpoons.
6000-2500	**Specialized Resource Development**. Terrestrial, littoral, and marine resources were utilized. Littoral and marine resources became increasingly important. Some sites may represent villages with permanent structures; most were temporary food processing camps. Shell middens developed after 4,000 years ago. Material culture

	assemblages include microblades, side-notched basalt projectile points, groundstone tools, and toggling harpoons.
13,000-6000	**Generalized Resource Development — Post Glacial Settlement**. Generalized use of a variety of resources including land mammals, plants, fish, and shellfish. Artifacts include heavy unifacial and bifacial stone tools and lanceolate projectile points scattered over a wide area. Sites are shallow and thought to represent food procurement and processing camps. Features include hearths, lenses of charcoal, and stake molds.

for records: the Washington State OAHP, the Washington Archaeological Research Center, the U.S. Forest Service, the Yakama Indian Nation, and the Yakima Training Center (YTC). Stilson (1988) distinguishes between sites recorded and surveys conducted in riverine and interior areas. Archaeologists recorded the majority of riverine sites along the Columbia River because almost 100 percent of the shoreline has been surveyed. However, less than five percent of the land adjacent to the Yakima and Naches Rivers has been systematically examined (Stilson 1988). Stilson (1988) notes that the majority of surveyed acres lie within the interior, particularly in the National Forest lands and the YTC. Between 1978 and 1988, archaeologists surveyed over 35,000 non-riverine acres within or near the YTC.

Excavations have been understandably less numerous than the surveys. As of 1988, 70 archaeological sites within the South Cascades Study Unit had been extensively investigated (53 tested, 8 excavated, 9 trenched) (Stilson 1988). Excavations tended to focus on the floodplains of the Columbia or Yakima Rivers, and only three non-riverine sites received an intensive examination. Researchers divided site testing evenly between interior and riverine areas (Stilson 1988).

Using information contained within the site records of each of the 759 recorded sites in the South Cascades Study Unit, Stilson (1988) grouped archaeological sites into a series of site types. These types are intended to be functional but only some are, indicating an inconsistent use of attributes with which the types are recognized. For example, some types are functional (e.g., habitation), some geological or locational (e.g., cave), others descriptive (e.g., rock piles/cairns), while still others are technological (e.g., quarries). Failure to distinguish and explicate the criteria used to assign each site to a type results in a division of sites into categories that may or may not actually provide information about the prehistoric use of the region.

Allowing for the potential interpretive problems this sort of typology causes, the results of the analysis might be informative. The most frequent type reported is the lithic reduction site (275 or 36 percent). Stilson (1988) assigns broken tools and preforms to this category, excluding those scatters containing raw material sources.

One-hundred-thirty-eight habitation sites have been identified in the study unit (18 percent). The criteria for assigning a site to this category include the presence of hearths, thermally-altered rock, living floors and/or structural features indicating long-term use, formed tools, utilized flakes, and/or faunal or other edible remains. Camps and villages are distinguished on the basis of the spatial distribution of material remains.

Other types of sites recorded less commonly include caves/rock shelters (11 percent), quarries (10 percent), task-specific procurement or processing sites (8 percent), rock piles (7 percent), rock art sites (4 percent), pits (4 percent), and trails or culturally modified trees (2 percent) (Stilson 1988).

Stilson (1988) classifies the setting of each of the sites within the South Cascades Study Unit using environmental parameters. Seventy-six percent of the sites are adjacent to an aquatic environment, which includes rivers, streams, intermittent streams, springs, and lakes. Upland areas contain the remainder of site locations and include upland flats (1 percent), slopes/talus slopes (9 percent), saddles (2 percent), and prominences, ridges, and ridge tops (9 percent). Stilson (1988) categorized three percent of the site locations as other or unknown.

No cultural sequences have been proposed exclusively for the South Cascades or for the uplands of the Columbia Plateau. Stilson (1988) relies on a sequence advanced for eastern Washington as a whole. The model is based on environmental fluctuations and perceived cultural responses to those changes over time. The chronology and diagnostic artifacts with which they are associated/recognized are presented in Table 3-3 (from Stilson 1988:17-22).

Columbia Basin

A large segment of the pipeline passes through the Columbia Basin. Several models have been used to explain cultural dynamics within this region. The first uses a gradualistic approach to explain the evolution from the generalized mobile foragers of the Windust Phase to the well organized salmon/root gathering specialists of the ethnographic period (Daugherty 1962). Others have argued that a fusion of different cultures led to the pattern observed during the ethnographic period (Swanson 1962). Recent evidence from the Chief Joseph Project (Campbell 1985) suggests that basic features of the "Plateau Culture" had emerged by 6,500 years B.P. and that ethnographically-observed traits were the result of increasing economic specialization and population growth. The chronological sequence of cultural change for the Columbia Basin is outlined below and summarized in Table 3-4.

Table 3-3 Models of Prehistoric Change in the South Cascades Study Unit (From Stilson 1988:17-22).

Research Issue	Early Period 8000-4000 B.P.	Middle Period 4000-2500 B.P.	Late Period 2500-250 B.P.
Land Use	river terraces near confluence of major streams, high altitude lakes and springs	riverine environments, small drainages	major rivers and larger lakes
Settlement	small seasonal occupation areas	larger seasonal occupation areas	winter villages, seasonal camps
Subsistence	generalized hunting and gathering	increased specialization	specialized seasonal collectors
Technology	large stone tools, lanceolate points	stone grinding, bone and antler tools, stemmed points	emphasis on bone and antler tools, decrease in stone tool use, small side-, basal-, and corner-notched points
Environment	warm, dry	moist, cool	moderately warm and dry

Table 3-4 Chronological Sequence for the Columbia Basin.

Years B.P.	Description of Culture Historical Phases
250-	**Historic Period.** Introduction of Euroamerican technology and non-indigenous diseases lead to culture change. Diseases bring about significant population collapse. Euroamericans settle in the region.
2500-250	**Cayuse Phase.** Population concentrated in large, nucleated winter villages of 50+ housepits. People dispersed to gather roots in the spring and to hunt in the fall and winter. This seasonal round became increasingly diverse and well organized over time. Trade with coastal groups was common.
4500-2500	**Frenchman Springs Phase.** Introduction of semi-subterranean houses and more specialized camps for hunting, root collecting, and plant processing. Several styles of contracting-stemmed points predominate. Many have argued that the ethnographically-observed "Plateau Culture" had emerged by the end of the phase.
8000-4500	**Vantage Phase.** Inhabitants were highly mobile, opportunistic foragers adapted mainly to riverine environments (Chatters 1986; Galm et al. 1985). Increasing reliance on fish with less use of game. Sites are located along stream margins and points are similar to those of the Windust Phase.
10,500-8000	**Windust Phase.** Characterized by small, highly mobile bands of foragers/collectors who exploited plant and animal resources using a seasonal settlement system (Chatters 1986). Sites are generally small and exhibit low artifact densities.
12,000-10,500	**Clovis.** Characterized by small, highly mobile bands of hunter/gatherers that exploited a wide range of subsidence resources, including bison and elk. Sites are usually small, exhibit low artifact densities, and are associated with early landforms, especially upland plateaus.

Clovis (12,000 - 10,500 BP)

Although it is uncertain when people first arrived in the area, the occasional discovery of Clovis projectile points suggests a minimum date somewhere between 12,000 and 11,000 BP. Recently, for example, a large cache of approximately 14 Clovis points was discovered buried in an orchard near Wenatchee. The Clovis point, a large, bifacially flaked point with a large "flute" or flake scar at the base, is the most diagnostic artifact type of this period. In the absence of radiocarbon dates these artifacts are treated as time markers and used to assign sites to this general chronological period. Other artifact types include large bifacially flaked knives or point preforms, scraping tools of various kinds, gravers for working bone, and cylindrical foreshafts of bone (Chatters 1989). Sites of this period are generally small and exhibit low artifact densities.

In Washington to date, there have been no extensive analyses published on these early materials. Consequently, the characteristics of settlement and subsistence during this period are purely conjectural. Based on evidence from elsewhere in the United States, however, it is likely that the structure of settlement consisted of small, highly mobile bands of hunter gatherers. Although Clovis points are generally cited as evidence for "big-game hunting", it is more likely that these early inhabitants of the region had a more generalized adaptation. This is based on the wide distribution of Clovis points covering many and varied environments. Subsistence was probably characterized by the use of complex floral and faunal resources that varied regionally, as well as seasonally within regions.

Windust Phase (10,500 - 8,000 BP)

By 10,500 BP the developing grasslands and gallery forests were sparsely populated by small, highly mobile bands whose generalized subsistence adaptation was seasonally structure by an increasingly complex resource structure. Similarly, technological innovations allowed for more intensive use of certain seasonal resources. The most diagnostic artifact is a large, stemmed or lanceolate projectile point, often used to assign sites to the general period. Other stone artifacts include bifacially flaked knives, wide, flat endscrapers, gravers, burins, bola stones, grooved net sinkers, milling stones, choppers, and simple flake tools (Leonhardy and Rice 1970; Cressman et al. 1960). Bone tools include wedges, single-piece and composite harpoons, foreshafts, atlatl spurs, awls, and needles (Cressman et al. 1960; Irwin and Moody 1978). Small group size and high mobility are indicated by sparse scatters of artifacts covering areas no greater than a few hundred square meters (Chatters 1989). Habitation sites included rockshelters, caves, and open areas, and evidence often suggests that these were frequently reused over long periods of time.

Riverine sites adjacent to rapids, particularly along the Columbia and Snake Rivers, contain an abundance of fish remains and associated artifacts such as grooved net sinkers and gorges (Cressman et al. 1960). This evidence indicates increasing intensification of anadromous fish populations in the Columbia and its tributaries. In drier, upland sites there is often a predominance of milling stones, suggesting that seed gathering was also an important aspect of subsistence. The diverse composition of faunal and floral remains indicates that subsistence, while still generalized, was increasingly structured by seasonally abundant or available resources.

Vantage Phase (8,000 - 4,500 BP)

During this period of time, inhabitants of the region restricted their range to riverine and some upland montane environments. With a gradual warming of the climate, regions became drier and subsistence activities became progressively less variable across seasons. Inhabitants were probably organized as highly mobile, opportunistic foragers adapted mainly to riverine environments (Chatters 1989; Galm et al. 1985). Artifacts characteristic of the period include leaf-shaped (Cascade) and large (Cold Spring) side-notched projectile points, ovate knives, end scrapers, gravers and burins, edge-ground cobbles, and flake and core tools (Leonhardy and Rice 1970; Cressman et al. 1960). Stone atlatl weights attest to the use of the atlatl. Some bones tools have also been found including bone awls, antler wedges, beaver-tooth chisels, and rare composite harpoon pieces. Graves containing beads of olivella shells indicate that trade took place (at least indirectly) between the Pacific coast and the interior river basins (Chatters 1989).

Sites and isolated projectile points dating to this period are nearly ubiquitous along river basins and at the confluence of major rivers (Chatters 1986; Cressman et al. 1960; Irwin and Moody 1978; Leonhardy and Rice 1970; Rice 1968, 1973). Faunal assemblages at these sites indicate that opportunistic hunting was restricted to a narrow range of vertebrate species. Among these species, deer and rabbit predominate followed by coyote and birds. Aquatic species, however, are found in much greater frequencies than terrestrial species, suggesting an increased focus on riverine resources as the climate warmed. Overall, the remains of fresh-water mussels predominate, followed by salmon, sturgeon, or trout remains.

Frenchman Springs Phase (4,500 - 2,500 BP)

An amelioration of the climate between 4,700 and 4,500 BP resulted in an increase in precipitation that significantly altered the nature and distribution of land use during this period. Non-riverine environments gradually became more productive leading to more diversely structured micro-environments affecting local adaptations. In addition to open sites and rockshelters, pithouses are found in riverine and some non-riverine environments. Some inhabitants were probably sedentary foragers living in widely dispersed pithouses, strategically located in game wintering areas, while others, especially along the Mid-Columbia, maintained a highly mobile, opportunistic foraging adaptation (Chatters 1989). Except for a hiatus between 3,800 and 3,400 BP, which may be more archaeologically apparent than real, pit houses become more frequent throughout the period.

Toward the end of the period, at least on the mid- and upper Columbia River, non-pithouse sites are believed to reflect functionally distinct habitations (Chatters 1986) including, hunting camps, shell-fish processing camps, fishing camps, and plant-processing camps (Chatters 1989). Artifacts include leaf-shaped projectile points, broad-stemmed points with rounded shoulders, and triangular points with concave, expanding bases. Other stone and bone tools remain much the same as in the previous period, with addition of the hopper mortar and an increase in bone needles, and single-piece and composite harpoons.

At least toward the end of the period, inhabitants of the region utilized a collector strategy in which mobility was logistically scheduled around annual resource structure. Along with evidence of an increase in the use of seasonally available resources is the increased evidence of food storage technology. Storage pits found in pithouse and rockshelter floors often contain salmon, deer, roots, and fresh-water mussels (Swanson 1962).

Cayuse Phase (2,500 - 250 BP)

A return to drier conditions by 2,300 to 2,200 BP resulted in decreased precipitation, again affecting the nature and distribution of land use. Resources became concentrated into fewer productive patches as resource productivity and diversity decreased. Archaeological evidence would seem to indicate: 1) intensification of resource collection within these more patchy micro-environments and 2) an increase in travel time between resources (Chatters 1989). Along the Columbia River there is a decrease in site numbers concomitant with an increase in the density of pithouses aggregated into villages. Villages of 10 to 200 pithouses are widely distributed on the middle and upper Columbia River and the Snake River, but large villages are generally absent above the Snake-Columbia River confluence (Schalk 1980). The larger villages were generally situated on islands or at the downstream end of large point bars.

Common artifacts of this period include narrow contracting-stemmed projectile points and triangular basal or corner-notched points, stone bowls, elongated pestles, self-handled mauls, nephrite adze blades, tubular stone pipes, beads of clam, olivella and dentalium shell, pendants of abalone shell, and anthropomorphic and zoomorphic rock carvings. In the winter, people inhabited pithouse clusters, often in defensible locations (Chatters 1989). In the spring they dispersed into small foraging groups inhabiting transitory root camps or fishing camps. Fishing was a mainstay in the summer and fall months. Fish, large game, and root crops were stored for consumption during the winter months when small groups again aggregated into larger villages.

3.2 Native Land Use in the Historic Period

Determining the precise geographic distribution of Indian groups at the time of Euroamerican contact is often difficult, especially for some of the groups along the Columbia River. Dislocation in this area began by at least the end of the eighteenth century, before Euroamerican explorers appeared (Campbell 1989). It is necessary to note that Euroamerican contact affected aboriginal populations and activities, both indirectly before the appearance of Euroamericans themselves and directly with the appearance over recorded history of explorers, traders, missionaries, and settlers.

The changes that Euroamericans stimulated in aboriginal culture are not easy to describe except in the most general way because contact itself was necessary to obtain the early historic and the later ethnographic accounts of the culture, leaving no certainty about aboriginal conditions. Some of the obvious changes included the introduction of Euroamerican diseases that reduced the population by two-thirds or more (Boyd 1985:398) and may have changed the focus of subsistence. Campbell (1989:188) has speculated that denser populations in earlier times may have been more widely distributed across the landscape, with subsequent depopulation concentrating survivors in more productive environments such as sections of rivers with anadromous fish. Adoption of the horse also led to significant changes, increasing the mobility and perhaps the territories of surviving groups by extending their ability to carry foodstuffs and other goods over longer distances.

Several Coast Salish-speaking groups occupied the Puget Basin, West Cascades, and East Cascades segments of the Project Area; and Sahaptin-speaking groups resided in the Columbia Basin along the Columbia River and its major tributaries, the Yakima and Snake Rivers. The following sections

describe the geographic distribution of specific tribal groups that occupied the areas in the vicinity of the Project Area, and their associated subsistence-settlement strategies.

Puget Basin

Observations made during the early eighteenth century indicate that the Snohomish, Skykomish, and Snoqualmie occupied the Puget Basin historically. The Tulalip Tribes consist of Snohomish, Stillaguamish, Skykomish, and Snoqualmie Indians. According to Phillips (1990:147) the name Tulalip refers to a small inlet north of the Snohomish River estuary, which the Indians named *duh-hlay-lup*, meaning "small mouth bay." The name was extended to the adjacent 18,191-acre Indian reservation surrounding the bay and to a small town on the northern shore of the bay.

According to ethnographic observations and Native American memories and oral traditions, the traditional mode of settlement was non-sedentary. This is an obvious strategy if one considers the spatial and temporal distribution of edible natural resources in the Puget Basin. As first articulated in this context by Suttles (1960a:302), the environment is characterized by tremendous variability. Suttles conceived of the variability in terms of four different levels: 1) variety of kinds, 2) local variation in occurrence due to diverse microenvironments, 3) seasonal variation in resource availability, and 4) annual fluctuations in abundance and availability of certain anadromous resources.

Thus, in order to exploit spatially and temporally clumped resources, people developed a mobile, seasonal-round type of settlement. An effective preservation and storage technology (Abbott 1971; Schalk 1977) increased the efficiency of the subsistence/settlement system. The villages, composed of a number of large plank houses, were traditionally occupied during the winter months, from late autumn through early spring. Localized subsistence pursuits for resources available in the warmer months (e.g., camas, shellfish, salmon runs, berries) involved dispersal of villagers from the main winter residence and construction of temporary camps. "In summer two to ten families camped together in shelters covered with mats or brush" (Haeberlin and Gunther 1930:10). Among the Puget Basin aboriginal groups, many of these temporary camps were set up near stream mouths primarily as fishing locations where salmon occurred predictably and in abundance and could be intercepted by weirs, traps, and other techniques.

Noted social effects of the Northwest Coast groups' articulation with their diverse environment include means of controlling or having access to the products of different microenvironments; in effect "a social system which could effectively link people over a wide geographic area" (Abbott 1971:268) and "which encouraged redistribution of resources over a broad area" (Abbott 1971:276). Village exogamy, patrilocal residence patterns and the potlatch system are commonly observed characteristics of the adaptation (Suttles 1960b, 1963).

The introduction of epidemic diseases by Europeans caused extreme and rapid depopulation of aboriginal groups. During the decades following initial contact, records indicate that six major smallpox epidemics occurred, approximately once every generation (Boyd 1985:71). Other deadly epidemics diseases that spread rapidly through the Pacific Northwest and contributed to the death toll include malaria, tuberculosis, syphilis, and influenza.

Recent research (e.g., Boyd 1985, Campbell 1989) suggest that aboriginal populations at contact may have already been greatly reduced through epidemics transmitted indirectly beginning early in the seventeenth century. Some researchers propose a 90% depopulation rate between aboriginal population size and that estimated by the Europeans during early historic times. A figure even half of this estimate implies drastic effects on political and territorial limits, social organization, settlement pattern, and subsistence practices. Thus it is apparent that, despite the relative abundance of information, caution must be exercised when attempting to extend ethnographic observations back in time.

West Cascades

The historic territory of the Snoqualmie Indians includes the West Cascades. At the time of sustained Euroamerican contact, the Snoqualmie consisted of two distinct groups, upper and lower bands (Waterman 1920). When the Point Elliott Treaty was signed in 1855, the Upper Snoqualmie band occupied approximately 58 houses on the prairies above Snoqualmie Falls (U.S. Court of Claims 1933:29, 178, 187). The lower band inhabited approximately 38 houses from the Falls area downriver to the confluence of the Snoqualmie and Skykomish Rivers (Tollefson 1990, personal communication; U.S. Court of Claims 1933:29, 178, 187). Estimates of Snoqualmie Indian population in the mid-1800s varied from as high as 373 in 1844 to as low as 225 in 1857 (Baenen 1981:450). These estimates represent populations decimated by disease and do not reflect pre-epidemic population levels (Baenen 1981:450).

Although both the upper and lower bands occupied the Snoqualmie River drainage, there were fundamental differences between them. The Upper Snoqualmie traded and had kinship ties with the Yakama and Wenatchee Indians of eastern Washington (Gibbs 1877:179-180). The lower band intermarried with Skykomish and Snohomish peoples and also interacted with Indian groups living along the coast of Puget Sound.

References to the number and location of ethnohistoric Snoqualmie villages vary. Watson Martin, a Snoqualmie Indian interviewed in 1927 at the age of 88, recalled up to 10 villages containing 3 to 18 houses each (U.S. Court of Claims 1933:178). Several villages are known for the Upper Snoqualmie, who occupied the area above the Falls. *Soxqo'ko*, located on the prairie north of the Falls at the present town of Tokul, may have been the principal Upper Snoqualmie village at one time (Teit 1928:108). Teit's information suggests the village was abandoned by ca. 1700, predating most ethnographic accounts of the area. Waterman (1920:48) records a village similar to *Soxqo'ko* called *Sq-qo'qo* which was located just south of North Bend on the South Fork of the Snoqualmie River. Tollefson (1988) identifies three Upper Snoqualmie villages: *Bokwab*, *Tswodum*, and *Sotsoks*.

A large Snoqualmie village was located near Tokul Creek, about one mile downstream of the Falls. Watson Martin referred to this village as *Toquill* (U.S. Court of Claims 1933:178). Curtis (1913:174) identified a village in this location as *Tipahlduhl*. *Toquill* and *Tipahlduhl* may be references to the same village.

Tollefson (1988:121-124) identifies three principal Lower Snoqualmie villages: a large village, which may have been an important military center (Tollefson 1988:124), located along the Snoqualmie River at the present town of Fall City; another village located at Tolt, several miles downstream of the Fall City village; and a third village located at the confluence of the Snoqualmie and Skykomish Rivers (Tollefson 1988:124). Tollefson asserts that this village was strategically placed to guard the mouth of the Snoqualmie River from intruders (1988:121).

The Snoqualmie Indians subsisted primarily on inland riverine and terrestrial resources. Salmon were taken along the length of the Snoqualmie River and its tributaries below the Falls during the autumn runs from September through December. Trout and Dolly Varden were available in the Snoqualmie River and its tributaries, and in mountain lakes above the Falls. Upper Snoqualmie people relied on kinship ties with villages below the Falls for salmon fishing privileges, offering prairie resources such as deer, and camas and bracken fern roots in return (Larson 1988). The river also provided freshwater mussels and crayfish (Turner 1976:31).

The Snoqualmie in general, and the Upper Snoqualmie in particular, hunted throughout the year, emphasizing deer and mountain goat. Lower Snoqualmie people supplemented their diets with resources from both lacustrine and marine environments. The prairies above Snoqualmie Falls provided camas and bracken fern roots, and wild tiger lily which were gathered during the summer months (Haeberlin and Gunther 1930). In addition, a variety of berries were available to Upper and Lower Snoqualmie groups along the river and at Snoqualmie Pass.

East Cascades and Columbia Basin

Although anthropologists do not completely agree on which ethnographic band or bands included the Project Area segments of the Yakima and Columbia River drainages within their territory, the distinction among the four nearby groups of Yakama, Umatilla, Kittitas, and Wanapum is unlikely to be significant in terms of aboriginal land use. These northwestern Sahaptin speakers generally shared the same culture, and the differences among them likely reflect variations in dialect, political alliances, or both. Acknowledging that the geographic lines among these groups of bands are not clear, Spier (1936) places the mouth of the Yakima River within the territory of the Wanapum, while Ray (1936) places it within Yakama territory. Traditional Yakama territory also includes the eastern flanks of the Cascades.

Southern Columbia Basin groups visited a number of environmental settings during the year's subsistence activities. These people employed various technologies to harvest each resource at the time and place it was available. Both men and women conducted the yearly subsistence work of fishing, gathering, and hunting resources that were consumed fresh and processed for winter storage. Hunn's (1981, 1990) work on the land use of the Mid-Columbia Sahaptins has supplied many details, particularly on the use of plants. Certain ceremonial activities accompanied the yearly harvests especially as the groups welcomed and gave thanks to each of the major food groups of salmon, roots, berries, and others.

Early spring activities began with root collecting as family groups left their winter settlements and camped in the tributary canyons, moving frequently, perhaps weekly, to higher elevations as local supplies were harvested and plants ripened in new locations (Hunn 1990). Women used digging sticks and woven bags to collect roots and pack them back to their camps for baking in earth ovens and drying for use as winter supplies. Family groups carried the dried roots back to the winter settlements and buried them in below-ground caches before they set out again to collect more resources. Early spring activities also included gathering the first greens that sprouted on south-facing slopes at lower elevations.

Groups then gathered at productive fishing stations along the rivers when the spring Chinook salmon runs began. The men fished while the women cleaned and dried the fish. As the catch dwindled, the groups again stored their supplies and left in later May to dig a variety of roots including bitterroot, camas, and others, establishing camp sites and moving them as the harvest progressed. Groups with access to streams where lamprey eels ran interrupted their root digging to net these fish.

While many roots are sparsely distributed, camas sometimes is concentrated in great meadows where large numbers of people could gather during the harvest season for work and socializing. One such meadow was recorded at Kittitas (Hunn 1990:127). As with other plant foods, those at lower elevations matured earlier in the year, allowing groups to extend the harvest by moving their camps to higher elevations as the season continued.

Chinook and blueback salmon and summer steelhead runs appeared in the rivers during summer, drawing the groups to return the new root surpluses to their winter caches and harvest the fish. The adoption of horses certainly assisted in the movement of food supplies and may have extended the ranges for resource harvest. As Hunn points out, each family might have to transport more than 1,500 pounds of dried roots over long distances for their winter supplies (1990:128). Men pursued their traditional role of fishing and women cleaned and dried the catch. Between fish runs, women gathered and dried berries, including golden currant, gooseberry, dogwood, serviceberry, and chokecherry (Hunn 1990:128).

Beginning in August, groups moved into the Cascade Mountains where they camped through the early fall to harvest and smoke-dry several species of huckleberries. While the women picked and harvested berries, men hunted deer and elk in the mountains. The groups likely split at times to allow some to return to the rivers in early September to harvest the fall Chinook run which provided much of the winter supply. They made a kind of pemmican from pounded salmon and dried berries, mixed with salmon oil. In October, people moved back to their winter settlements, processing the dying salmon of the fall Chinook run.

Columbia Basin groups maintained permanent winter settlements along protected tributaries to the Columbia and other rivers. Living in semisubterranean houses, mat lodges, or other types of substantial structures, extended families used the winter months to make and repair tools, baskets, clothing, and other necessary items. They visited other groups, conducted religious and social ceremonies, exchanged

information and food surpluses, and repeated the stories of their mythology that instructed children about how to make their living and how to treat other people. Burials of various types were associated primarily with the winter settlements.

Indian Treaties

During late 1854 and in 1855, Isaac Stevens, the first governor of Washington Territory, negotiated several treaties with the Indians to obtain land sessions for the non-Indian settlers who were rapidly taking up claims. In the study area, Stevens met with Indian groups at a number of locations including Point Elliott and Walla Walla. Tribal leaders agreed to take their people to their respective reservations. However, some Indian families did not move to the reservations, and some other families left the reservations to return to their aboriginal territories. Executive Orders later established additional reservations.

The Treaty of Point Elliott resulted in the establishment of the Tulalip Reservation for the Snohomish, Snoqualmie and other groups. The Yakima Treaty at the Walla Walla Treaty Council established the Yakima Reservation for the Yakama, Kittitas, and other groups (Marino 1990; Murphy 1976; Powell 1899). Other reservations were established by Executive Order after the treaty negotiations and contained members of several of the above-mentioned tribes.

3.3 History

Puget Basin

The Puget Basin is bounded on the east by foothills of the Cascades and on the west by Puget Sound. Snohomish and King Counties are the major political units in the basin. Topographically, both counties contain coastal plains, fertile river valleys, and once heavily wooded uplands. Two major rivers, the Skykomish and the Snoqualmie, drain the region in the vicinity of the Project Area. These two rivers and lesser tributary streams played primary roles in the settlement and economic and commercial development of the region.

The first Europeans to explore the Puget Basin were members of Captain George Vancouver's voyage of discovery up the western coastline of what is today known as the Pacific Northwest. After two months of exploration in Puget Sound, Vancouver stepped ashore in the vicinity of present-day Everett, Washington, to claim the land for King George III. In honor of the monarch's birthday, Vancouver named the lands New Georgia (Johansen and Gates 1967:46-47; Schwantes 1989:24).

Early in the nineteenth century, the Puget Basin received little attention from the Euroamericans who were contesting ownership of an area that is now the states of Oregon, Washington and Idaho, called

the "Oregon country". It was not until 1841 that Lt. Charles Wilkes, an American naval officer exploring the entire western seaboard, officially recorded his observations of Puget Sound and urged that it not be surrendered during boundary negotiations (Johansen and Gates 1967:200).

To encourage settlement of the Oregon country, the U.S. Congress passed the Donation Land Law in 1850. The law set in motion the survey of land in the Oregon country and established a donation system to distribute public lands. Single male settlers moving to the Puget Basin, which was then a part of Oregon country, received a 320-acre donation of land; if married, his wife received a like amount (Johansen and Gates 1967:231).

In 1853, the Washington Territory became a separate political unit and Isaac I. Stevens was appointed the first governor. Congress enacted the Donation land Law before treaties with Native Americans already occupying donation lands could be completed. In 1855, Stevens met with a number of Native American tribes at the Council of Walla Walla, in southeastern Washington, to make treaties concerning settler occupation of the donation claims. These agreements, conducted in the imprecise Chinook jargon, fostered misunderstandings and resentment. Consequently, the next three years were punctuated by bloody violence on both sides of the Cascades. In 1859, Stevens and eight tribes from the Puget Basin signed a treaty at Mukilteo, in present-day Snohomish County. After this point, settlement in the Puget Basin began in earnest. The exploitation of the Puget Basin's natural resources became the driving force behind the influx of settlers (Whitfield 1926:56; Schwantes 1989:104; Johansen and Gates 1967:256-258).

The abundance of timber in the Puget Basin was both a curse and a blessing. In the early 1860's, settlers confronted the difficult task of clearing the forests to create farmland. To finance land clearing and support their families, farmers cut and sold their own timber to sawmills operating along the seacoast. One of the first sawmills in the basin was located at Tulalip, Washington, in present day Snohomish County. To move the timber, farmers used oxen on skid-roads or dumped the timber into sloughs that sometimes had to be straightened to allow passage of logs. As settlers moved from the coastal areas into the interior, they sometimes eased their land-clearing burden by leasing their timber rights to professional loggers. In 1873, one of the first inland, water-powered sawmills was built on Tokul Creek below Snoqualmie Falls (Watson 1992:np; Whitfield 1926:677-679; Evans 1990:29).

In the early 1870s, professional loggers from the Midwest began to appear in the Puget Basin. The Blackman Brothers of Snohomish County, for example, revolutionized logging by moving timber out of the forests on wheeled trucks on wooden rails made from maple. Their ingenuity eventually resulted in the growth of many small logging railroads throughout the basin. By 1885, the production of wood shingles had become a growth industry in the Puget Basin. The arrival of shingle-cutting machines and the advent of steam-powered sawmills quickened the pace of production. Steam-powered donkey engines replaced oxen and logging railroads -- narrow and later standard gauge -- replaced the skid roads (Whitfield 1926:684).

Initially, most logging occurred near the coast where logs were easily transported by water to the mills. By the late nineteenth century, however, logging camps had moved deeper into the old growth forests. Logging camps, comprised of cookhouses, work buildings, dormitories, and eventually narrow-gauge railroads, provided loggers with the necessities of life. The roadbeds and trestle bridges required to carry the tracks were considerable construction feats in themselves (Johansen and Gates 1967:320).

The early 1900s were boom years for the timber industry, but by 1915, the number of sawmills west of the Cascades had been reduced by 60 percent (Stirling 1989:13). Many logging camps and sawmills disappeared from the basin. The mills that remained in operation after the 1910s merged with major timber interests like Weyerhauser. These larger operations continue to produce millions of board feet of lumber and plywood annually (Schwantes 1989:177).

As logging crews cleared land in the Puget Basin, the farmers and dairymen followed closely in their footsteps. Once timber was harvested, farmers began to remove stumps, drain marshy areas, and in some cases, build dikes to protect their fields from periodic inundation by local streams. The wet climatic conditions of the basin were and are ideal for growing grains, various forage grasses such as timothy, and for grazing herds of dairy cows. These animals were imported into the basin in the 1880s. The Carnation Company, an early producer of canned, evaporated milk began a breeding farm near the city of Carnation, Washington in 1909 (Brier 1958:90). Pastures, dairy barns, and outbuildings dotted the entire landscape. The production of butter, cream, milk, and evaporated milk kept active 1,500 to 2,000 dairy farms in King County in the early twentieth century. Distribution of these products extended as far as Alaska and British Columbia (Hamilton 1916:17; Whitfield 1926:642; Johansen and Gates 1967:380).

Truck farms, fruit orchards, and hay fields spread throughout the Puget Basin. The first orchard in the northern basin was planted in 1865. By 1878, farmers had harvested oats, timothy, and red clover in fields created from stream flood-plains, drained marshes, and logged-over acres in the uplands. Fruits and berries were cultivated for shipment to local markets. Towns such as Bothell, Fall City, and North Bend depended on agriculture for their initial growth. Farms growing vegetables for market consumption and for seed purposes flourished in the valleys of the basin well into the twentieth century (Hutchinson 1916:17).

The expansion of railroads encouraged the growth of agriculture in the area. In 1887, the transcontinental Northern Pacific Railroad reached Tacoma and Seattle via Stampede Pass. The Puget Basin had developed a railroad system to service local markets. Small local railroads such as the Seattle, Lake Shore and Eastern Railway carried people and agricultural products around the area. The Northern Pacific Railroad offered the capability to ship lumber, dairy products, slaughtered beef, and limited amounts of perishable fruits eastward over the Cascades to a wider market. Shipment by rail lowered the price of lumber, increased the availability of finished lumber for houses, and spurred the logging industry to even greater heights to meet growing demands (Schwantes 1989:154).

The Chicago, Milwaukee, and St. Paul Railroad came to Seattle by way of Snoqualmie Pass in 1909. Known locally as the Milwaukee Road, this railroad provided many smaller farming communities in the Puget Basin and the Western Cascades with reasonably direct access to markets without having to go to major cities such as Seattle. The loggers in the basin and in the uplands often built standard gauge logging railroads to connect with both the Northern Pacific Railroad and the Milwaukee Road. Most of these logging railroads have been removed, but roadbeds and some trestle bridges still remain (Bagley 1929:787-788).

West Cascades

The West Cascades include the foothills along the eastern boundaries of Snohomish and King Counties. The region, because of its irregular contours and lack of flat areas, contained limited potential for farming, but timber was and is still being harvested there. The headwaters of the Skykomish and Snoqualmie Rivers rise in this region.

Settlement of the Snoqualmie River Valley by Euroamericans appears to be a natural extension of the Puget Basin experience. Loggers and their logging camps, sometimes mounted on railroad cars, moved into the upland old-growth forest after the massive supply of timber was depleted in the basin. The first settlers arrived in the late 1860s to claim homesteads. In the 1870s, settlers in the Snoqualmie Pass area leased pasture to drovers moving cattle to Seattle through the pass; others operated way stations that furnished room and board to travelers (Prater 1981:66).

Agriculturally, the West Cascades were similar to the Puget Basin in regards to truck and dairy farming. Beginning in the 1870s, wherever the logged-over land was flat enough to be cultivated, farmers endeavored to plant orchards, raise forage grasses, and for a time, Irish potatoes. The potato in the late 1890s succumbed to a beetle that eliminated them as a viable commodity. Hops were the Snoqualmie Valley boom crop of the 1880s. At one time, 1,500 acres were under cultivation and harvesting this crop required the employment of 1,200 Native Americans. The collection of buildings around the Hop Growers Association farm, in the vicinity of North Bend, included a post office, cookhouse, trading post, barns, kilns. Kilns used to dry the hops operated around the clock (Evans 1990:25; Prater 1981:66).

Logging in the West Cascades continued the process begun in the Puget Basin. A traveler to Snoqualmie Pass in 1887, Dr. W.H. Ruffner, commented on the timber resources in the region. Ruffner, who was writing a book on the Washington Territory noted, "the sun never touches the earth in these forests. The trees rise to the height of 250 feet or upward, ... shutting out the sunlight and awing the traveler" (quoted in Prater 1981:76). In the early 1890s, logging moved into the Snoqualmie Pass area in the vicinity of North Bend. First in operation was a sawmill and a shingle mill in 1890. Later, another sawmill and a shingle mill were consolidated and became the North Bend Lumber Company in 1904. By 1914, Weyerhauser and a smaller company had merged to form the Snoqualmie Falls Lumber Company, one of

the largest on the Pacific coast (Evans 1990:29). This mill site included company houses, a company store, a school, hospital, railway station, and dormitory facilities for bachelor workers. The logging camp eventually became a permanent community, Snoqualmie Falls (Watson 1992:np). Lumber company mergers became more commonplace in the 1910s. Consolidating logging railroad assets, timber leases, and mill resources became the means to survive. Most large companies operated their own railroad spurs that connected with major railroads like the Northern Pacific Railroad or the Milwaukee Road (Map, Northern Pacific Railroad 1937:np).

East Cascades

The East Cascades region extends from the crest of the Cascade Range in Kittitas County, southeastward in the Yakima Valley to a point between Cle Elum and Ellensburg, Washington. The higher elevations form the watershed for the Cle Elum, Teanaway, and Yakima Rivers.

The first permanent settlers in the Kittitas Valley arrived in 1867. They were cattlemen who were looking for grazing land for their cattle. The bunch grass that was the predominant ground cover on the lower hills provided excellent forage. One enterprising individual even drove a flock of 500 sheep from the Puget Basin over the Snoqualmie Pass to take advantage of the wide open grazing. Cattlemen from the Yakima Valley regularly drove herds of cattle through Snoqualmie Pass to Seattle; they also found ready markets in mining and logging camps adjacent to the route (Prater 1981:67-68: Brier 1958:87).

Mining became important soon after the arrival of the first settlers. Gold was discovered in the early 1870s on Swauk and Pehastin Creeks. Originally, the gold was mined using simple panning and some shallow pit mining. Advances in mining technology, coupled with a desire to increase production, brought hydraulic monitors into use to gouge away the hillsides and release the gold deposits (Prater 1981:69; Lyman 1919:585).

Coal was discovered in the Roslyn/Cle Elum area in 1884. The Northern Pacific Railroad, which laid track through the area around the same time, developed two mines for company use in the Roslyn coal field. Coal mine production at Roslyn peaked at 1.8 million tons in 1920 (McCulloch 1990:10). Although often masked by foliage, the remains of many open-pit coal mines surrounding Roslyn and Cle Elem are visible today, resembling a moonscape. Tipples, narrow gauge railways, worker housing, and coal-loading equipment surrounded the open mines. Coal was mined in the immediate area until the 1950s when production costs became too high (Prater 1981:71-72: Washington State 1939:125).

Timber was first harvested in the East Cascades in the late 1890s. Prior to the construction of local logging railroads, the Ponderosa pines and Douglas firs were floated down the Yakima River to the Cascade Lumber Company's mill at Yakima, Washington. The Northern Pacific Railroad and, later in 1909, the Chicago, Milwaukee and St. Paul Railroad provided access to the transportation terminus in Seattle and

eastward to the Midwest for all manner of forest products. The small portable sawmills clustered around Cle Elum provided lumber for the local markets, also meeting the needs of the railroads. One sawmill was dismantled and moved to the vicinity of Stampede Pass. The sawmill produced sawn lumber and milled timbers for trestle bridges as well as other railroad structures for the Northern Pacific Railroad. Some of the old logging railroad rights-of-way later developed into part of the Kittitas County road system (Henderson 1981:7-8; Lyman 1919:577).

Transportation played an important role in the development of the region. Snoqualmie Pass was a transportation corridor well before the arrival of the railroads in the late nineteenth century. In the early 1870s, traders used pack trains to transport merchandise from Seattle to the trading posts near Cle Elum and Ellensburg. Drovers used the Pass to move their herds to the slaughter houses in Seattle. When refrigerated rail cars came into use in the 1890s, meat, fruits, vegetables, and dairy products traveled to midwestern markets on the Northern Pacific Railroad. Coal not destined for local use was shipped in gondola cars to distant markets (Pugh 1982:23; Lyman 1919:581).

In 1883, a group of businessmen organized the Seattle and Walla Walla Train and Wagon Road Project, in Ellensburg, WA, to keep the road operational through all seasons of the year; it was successful well into the early twentieth century. In addition to keeping the road clear of obstacles, the company provided "cabins and stables constructed not more than five miles apart along the snowy portion of the road" as protection for its customers (Prater 1981:37). During its lifetime, the route of the wagon road changed to accommodate differences in the season or in the type of traffic, vehicular versus four-legged. The growth of mining and logging activities in the Upper Yakima Valley added to the myriad changes to the route (Prater 1981:47).In 1915, a new hard-surface road capable of handling automobiles was completed and much of the old wagon road fell into disuse. A portion of the old wagon road, near Denny Creek at the summit of the Pass, is preserved on Snoqualmie National Forest land (Pamphlet, U.S. Forest Service:n.d.).

In the 1890s, farmers in the region had land and a means of transporting products to market, but without water, production was limited to dry land crops. Agricultural production in the East Cascades depended on early development of irrigation systems. Rudimentary irrigation projects began with the digging of simple ditches that redirected water from the Yakima River and smaller tributary streams. In 1910, irrigation projects were supporting 250 farms near Ellensburg. Crops grown in irrigated fields included fruits, alfalfa, grains, potatoes, oats, clover, barley, and some vegetables. Pastures were created to graze dairy cows; the milk production was transformed into cheese and other dairy items at local creameries. The agricultural industry in the region also included poultry, hogs, and some cattle (Lyman 1919:625; Washington State 1939:129).

Columbia Basin

The Columbia Basin includes the lower Yakima Valley and much of the southeastern quadrant of the state. The region is drained by the Yakima, Snake, and Columbia Rivers. The Columbia River, because of its importance to irrigation projects and its generation of hydroelectrical power, has had the greatest influence on the region.

The first Euroamerican exploration of this region was most likely Lewis and Clark's expedition, which traveled through the area of the Snake and Columbia Rivers in 1804-05. Soon after Lewis and Clark returned to St. Louis, Missouri, fur trappers from John J. Astor's Pacific Fur Company moved into the northern Columbia Basin region and built Fort Okanogan (Schwantes 1989:58). Not long after that, Fort Nez Perce, near the confluence of the Snake and Columbia Rivers, became the outfitting post for fur trapping expeditions up the Snake River. Later renamed Fort Walla Walla, the immediate vicinity took on national importance in 1847. The Whitmans, an American missionary couple, operated a provision center, rest station, and hospital for immigrants to the Oregon country just twenty-five miles east of the fort. In 1847, Cayuse Indians killed the two missionaries, along with fourteen other whites in the local area (Johansen and Gates 1967:173-73). The Native Americans in the Oregon country were soon subdued. The Whitman Massacre encouraged the U.S. Congress to establish order in the region. Oregon received territorial status and a governor was appointed in 1849 (Johansen and Gates 1967:226).

In the 1850s, warfare again erupted with the interior Native American tribes, under pressure from an influx of white miners, cattlemen, and settlers. Washington's territorial governor, Isaac I. Stevens, attempted to end these bitter conflicts by holding a council at Walla Walla, Washington, in 1855. Here he negotiated treaties granting title of the Native American lands to the whites. But the treaties did not eliminate trouble and growing pressure from whites resulted in a series of short, bloody battles. After three years of skirmishing, the Native Americans were subdued, but the lasting result of this period of upheaval was a slowing of settlement east of the Cascades. It was not until the early 1870s that permanent settlements began to increase in the Columbia Basin. On a trip across the Washington Territory, Governor Stevens called the region "the Great Plains of the Columbia" and maintained it would support a farming population (Johansen and Gates 1967:250-254; Schwantes 1989:106).

Before any farming could commence, settlers had to decide how this sagebrush covered prairie of rolling hills could be cultivated. Early cattlemen had overgrazed the free lands, with little concern for the consequences. Farmers arriving in the region, in response to railroad promises of cheap land, realized dry land farming was the only method that could be employed. The topography of the region lends itself to growing crops on a grand scale. Wheat was the crop of choice for two reasons: wheat was a dry land crop and to be profitable it had to be cultivated in huge quantities. Both of these conditions existed in the Columbia Basin. Wheat flourished in this limited-moisture environment. The first wheat crop recorded in the area was harvested in 1879. By 1890, the region had over a million acres under dry land cultivation (Johansen and Gates 1967:373-374; McCulloch 1990:12).

The rudimentary farmer-constructed irrigation systems of the late nineteenth century could not support agricultural growth of the magnitude sought by the residents of the Upper Yakima Valley. Between 1885 and 1910, the Upper Yakima Valley experienced the birth and death of many irrigation projects that left their imprint on the face of the land. However, a few irrigation projects survived and grew in size over the ensuing years. In 1885, Ellensburg built a canal known as the "Town Ditch" that stretched from the Yakima River northwest of the town, circled the town on the north and east sides, and terminated south of the town of Kittitas, WA. (Vandevere 1948:50).

In 1903, the Cascade Canal Company came into existent to construct a major irrigation system north of Ellensburg; the source of water was a newly-dammed Lake Kachess in western Kittitas County. Eventually, the Cascade Canal would reach from Lake Kachess southeastward around Ellensburg and terminate south of the town of Kittitas, WA. In 1913, the Cascade Irrigation District acquired the Cascade Canal Company in the belief that a public corporation could best serve the needs of the district residents (Lyman 1919: 357,623). The Cascade Irrigation District continues to operate successfully to this day.

In the 1920s, the U.S. Bureau of Reclamation embarked on a major irrigation program called the Yakima Project. The Kittitas Division of this Project developed a new canal system that envelopes many of the earlier irrigation projects. The Main Canal for this Project brings water from the division dam near Easton, WA, and distributes it through a North and South Branch to thousands of acres of farmland in Kittitas County (Map, Bureau of Reclamation 1982).

Railroads, which did not service this region until the late 1880s, encouraged wheat growing. Once the Northern Pacific Railroad pushed it tracks through Pasco, Washington, it was in need of markets in the region. Wheat farming communities created demands for inbound consumer goods and farming machinery. Railroads changed the economic picture for local grain growers by shipping wheat at lower prices. At the same time, they guaranteed themselves steady employment for their rail cars. Prior to this time, the cost of transporting a bushel of wheat to England via ship was cheaper than sending it to millers in Chicago (Johansen and Gates 1967:377; Washington State 1939:125; McCulloch 1990:12).

In 1890, the first winter wheat was grown in the region. Accessibility to cheaper transportation spurred the agricultural economy. By 1912, the region had averaged 3 million bushels of winter wheat per year. This average increased to 6 million bushels per year by the late 1940s (Ritzville *Journal-Tribune* 1949:17).

Storage facilities for the harvested winter wheat grew in numbers as the crops increased in volume. Initially, one-floor warehouses were able to accommodate smaller volumes of sacked grain, but later grain elevators were used to store winter wheat in bulk quantities for shipment by barges on the Columbia River. Barge shipment on the Columbia River replaced railroad cars as the primary means of transporting grain out of the Columbia Basin. No agricultural commodity in the state ranked higher than wheat. By 1910, it

represented 44.5 percent of the total value of Washington crops (Schwantes 1989:153,167-68).

Wheat was not the only crop grown in the region. Irrigation allowed farmers to broaden their agricultural horizons. The first major irrigation project in this region was a private venture called the Sunnyside Canal, which began operations in 1892. Acquired by the federal government and linked with other area irrigation projects, the Sunnyside Canal became part of a larger effort by the U.S. Reclamation Service known as the Yakima Project. The Yakima Project provided irrigation for 460,000 acres (McCulloch 1990:18). With increased development of water storage capacity and the growth of irrigation systems in the 1930s-40s, the region began to expand its agricultural base. The crops grown in these irrigated fields included potatoes, alfalfa, root crops, asparagus and peas. Orchard crops such as apples, pears, prunes, and cherries became common around the turn of the century (Schwantes 1989:171).

The largest irrigation project to affect the region was the Grand Coulee Dam, completed in 1941. Built during the Great Depression, Grand Coulee Dam was expected to accomplish three objectives: provide jobs for unemployed workers, generate inexpensive electrical power, and impound water for irrigation of fields in the Columbia Basin. The irrigation portion of the project consists of an impoundment area, massive pumps that raise water from lake elevation to an equalizing reservoir, and a series of four secondary storage reservoirs. The water is conveyed to the fields through hugh siphons, tunnels, and a labyrinth of canals. By 1960, the combined length of main and lateral canals had increased to 4,500 miles. The Columbia Basin Project, made possible by Grand Coulee Dam, irrigates more than one million acres in Central Washington (Brier 1958:104).

Part of the massive project to irrigate the Columbia Basin was the construction of the earth-filled O'Sullivan Dam in Grant County, which was completed in 1948. O'Sullivan Dam creates Potholes Reservoir that impounds almost 400,000 acre feet of irrigation water for the East and West Branches of the Potholes Canal System. Constructed between 1948 and 1966, the Potholes irrigation system, with its associated canals, syphons, ditches, laterals, and wasteways, irrigates the farmlands and orchards in Franklin, Grant, and Adams Counties (Pitzer 1990:97; US Bureau of Reclamation 1964:8). Completion of the Columbia Basin Project brought to a end the struggle, started in the early twentieth century, of individual farmers or loosely-knit private consortiums to bring water to the parched acres of land in the region.

As population in the state increased, the demand for beef increased proportionally. Livestock raising became more profitable because railroads could satisfy this demand more efficiently. In the 1870s and early 1880s, most cattle raised in the Kittitas and Yakima Valleys was either driven long distances on foot through the Snoqualmie Pass or shipped down the Columbia River on boats. Commenting on the volume of cattle moving westward through the Pass, the editor of the *Yakima Signal* wrote in 1883, "the Yakima country sends ... several hundred cattle every few days ... Seattle and Portland must be doing some tall eating" (quoted in Pugh 1982: 29). Later, the stockyards at Pasco, Washington, constructed after the Northern Pacific Railroad arrived, served as a major collection and shipping point for cattle moving to

Seattle or midwestern markets. Rail connections with the Northern Pacific Railroad allowed cattlemen to ship their cattle direct to market without the losses incurred during long drives. Covering an area of thirty-seven acres, the holding pens, watering facilities, loading chutes, railroad sidings, and other buildings almost resembled a small town (Pugh 1982:30; Washington State 1939:125).

In 1943, a new industry appeared in the region. A super-secret military installation was built in the vicinity of Richland, Washington. Unknown to the local residents, this plant was an integral part of the wartime Manhattan Project that produced the World War II atomic bombs. The facility was located there for a number of reasons, not the least of which was its proximity to Grand Coulee Dam and its enormous quantities of electrical power. The Hanford facility produced plutonium for the explosive pits in atomic bombs (Schwantes 1989:326; Reisner 1986:170).

The massive amounts of electrical power produced by Grand Coulee Dam influenced the region in another manner. During WWII, the available electrical power made possible rapid expansion of the wartime and post-war economy. Aluminum for airplanes, sub-assemblies for destroyers, and castings for the Seattle shipyards were produced in the region using Grand Coulee power. Population in the region swelled as more industrial output was required and more jobs were created. After World War II, some industries started during the 1940s war kept the Pasco-Richland-Kennewick area economically active. The availability of cheap electrical power continued to draw businesses to the region (Johansen and Gates 1967:529-530).

Summary

In summary, much of the infrastructure in the four regions relating to agriculture, mining, industry, and transportation resulted from an extractive economy. Early development of the regions depended on the exploitation of natural resources. As the timber and mining industries reached productive peaks or natural resources became depleted, the industry sought a level of continued, long-term productivity. The results of industry leveling was demonstrated by failed companies or mergers that consolidated production activities and conserved resources. The survivors of this process remain productive today.

While an industry may still exist in the regions, the boom and bust nature of timber, mining, or any exploitative industry leaves behind many remnants of old infrastructure. For that reason, old trestle bridges and deserted railroad rights-of-way exist in the second or third growth forests harvested today. Evidence can be found of old portable sawmills that produced lumber for local communities or for railroads. Remnants of open-pit coal mines and associated infrastructure cover the hillsides around Roslyn in the East Cascades. These historic resources serve as reminders of major developmental themes in Washington's past.

3.4 Results of Background Research

HRA collected background data from a number of federal and state sources to ensure adequate coverage of previously recorded historic and prehistoric cultural resources that occur within a two-mile-wide research corridor centered on the proposed pipeline.

Research archaeologists and historians reviewed late 19th century General Land Office (GLO) survey plats for every township and range included in the pipeline research corridor to provide information about the history of land ownership. In addition, surveyors' early observations concerning aboriginal features (such as trails and burials) and historical cultural resources, enabled HRA researchers to identify potentially sensitive locations in the research corridor.[1]

HRA used records on file at the Washington State OAHP extensively for this project. Researchers consulted several kinds of records. Personnel examined the site form files and the historical structure inventory files to determine if any archaeological sites or historic structures had been previously recorded within the research corridor. Review of the National and State Register files allowed HRA to determine if any properties in the research corridor are listed in the Registers. Finally, examination of CRM reports that have been submitted to the OAHP for each county allowed researchers to determine the extent and nature of previous archaeological work in the research corridor.

HRA and Dames & Moore researchers also reviewed cultural resource materials on file at the offices of the Mt. Baker-Snoqualmie and Wenatchee National Forests. U.S. Forest staff provided copies of site forms and survey reports recorded within the research corridor, and a list of Indian tribes with potential land use concerns in the vicinity of the proposed pipeline.

The results of this research effort are presented in the sections that follow. Section 3.4.2 outlines previous research within the research corridor, summarizes previously recorded cultural remains that occur within the pipeline Project research corridor, and lists the location of potentially sensitive areas identified through the background research effort.

Previous Investigations within the Research Corridor

The cultural resource assessments discussed in this section vary greatly in the description of the methods employed, the actual area surveyed, and the analysis of materials found during the course of the survey. The majority of these surveys were initiated for CRM and are limited to the right-of-way of specific construction projects. Also, some of the reports were written more than 10 years ago when survey methods

[1] HRA obtained GLO plats from the University of Washington Libraries and the National Archives, Pacific Northwest Region.

were less rigorous than they are at present. The assessments described in this section are arranged roughly west to east, and are divided by environmental region. Table A-1 identifies archaeological sites and historical properties previously recorded in the pipeline research corridor. Table 3-5 summarizes HRA's expectations for the survey, listing known site locations and potentially sensitive areas within the 200-foot-wide pipeline survey corridor.

Puget Basin

Regan (1992) examined a stretch of SR 522 between SR 9 and SR 2 in Snohomish County, which intersects Segment 1 of the pipeline route. The survey identified several historic buildings in Maltby (Regan 1992:6).

Archaeologists performed a survey of the right-of-way (ROW) for a proposed transmission line, which extends from the South Fork Tolt River Dam to a substation located between Duvall and Carnation (Fugro Northwest, Inc. 1980). This survey intersects the pipeline ROW in Segment 5. The study located six isolated finds that were determined to be ineligible for listing in the National Register. The report does not mention the exact locations of the isolates.

Table 3-5 Survey Corridor Expectations (based on OAHP records and GLO plat maps).

Resource Type	MP	Legal Location	NRHP Status	Reference
Wm. Stevenson homestead	--	T26N, R7E, Sec 4, NW¼, NW¼, SW¼	Undetermined	GLO (1885)
Historical road	--	T26N, R7E, Sec 21, SE¼	Undetermined	GLO (1885)
T.W. Luke house	--	T26N, R7E, Sec 21, SE¼, SE¼, SE¼	Undetermined	GLO (1885)
A. Haggerty house	--	T26N, R7E, Sec 34, NE¼, NW¼, NE¼	Undetermined	GLO (1885)
R. Smallman house	--	T24N, R8E, Sec 33, SE¼, SW¼, SW¼	Undetermined	GLO (1899)
Milwaukee RR Covered Bridge	--	T23N, R8E, Sec 4, SE¼, SW¼, SE¼	Undetermined	Bullis (1977)
Green River Northern RR spur	--	T23N, R8E, Sec 14, N½, S½	Undetermined	GLO (1893a)
Historical road	--	T23N, R8E, Sec 14, N½, S½	Undetermined	GLO (1893a)
J. Gregor house	--	T23N, R8E, Sec 14, SW¼, NE¼, SE¼	Undetermined	GLO (1893a)
Salal Station (depot)	--	T23N, R8E, Sec 14, SE¼, SE¼, SE¼	Undetermined	GLO (1893a)
Historical road	--	T23N, R8E, Sec 24, north end: SW¼, SW¼, NE¼; south end: NW¼, SW¼, SE¼	Undetermined	GLO (1893a)
Historical road	--	T23N, R8E, Sec 25, SW¼, NW¼, NE¼	Undetermined	GLO (1893a)
Historical road	--	T23N, R8E, Sec 25, NW¼, SE¼	Undetermined	GLO (1893a)
Historical road/trail	--	T23N, R9E, west end: Sec 29, NW¼, SW¼, SW¼; east end: Sec 34, NW¼, NW¼, SE¼	Undetermined	GLO (1893b)
D.J. Revington house	--	T22N, R9E, Sec 12, NE¼, NE¼, NE¼	Undetermined	GLO (1893c)
C.P. Beard house	--	T22N, R10E, Sec 7, NW¼, NW¼, NW¼	Undetermined	GLO (1893c)
Historical toll road segment	--	T22N, R10E, west end: Sec 7, N½, SE¼; east end: Sec 14, S½, NE¼	Undetermined	GLO (1893d)

Resource Type	MP	Legal Location	NRHP Status	Reference
Wm. Stevenson homestead	--	T26N, R7E, Sec 4, NW¼, NW¼, SW¼	Undetermined	GLO (1885)
45KI58 (historical R.R. Trestle)	--	T22N, R10E, Sec 7, SE¼, SE¼	Ineligible	USDA, MB-S N.F., 3/79.
Historical road segment	--	T22N, R10E, west end: Sec 17, SW¼, NW¼, NE¼; east end: Sec 16, SE¼, NW¼, NW¼	Undetermined	GLO (1903)
45KI270 (historical wagon remains)	--	T22N, R11E, Sec 18,	Undetermined	USDA, MBSNF (1982)
CR06-05-05-51 (Chicago Milwaukee St. Paul & Pacific Snoqualmie tunnel)	--	T22N, R11E, west end: Sec 17, SW¼, SW¼, NW¼; east end: Sec 15, SW¼, SE¼, NW¼.	Ineligible	Ford (1988); McDonald (1990)
Chicago Milwaukee Puget Sound RR	--	T22N, R11E, Sec 15, SW¼, SW¼, NW¼	Undetermined	GLO (1911)
tramway	--	T22N, R11E, Sec 27, N½, NW¼	Undetermined	GLO (1911)
Chicago Milwaukee Puget Sound RR	--	T22N, R11E, west end: Sec 27, NW¼, NE¼, NW¼; east end: Sec 35, NE¼, NW¼, SW¼	Undetermined	GLO (1911)
45KT835 (lithic scatter)	--	T22N, R11E, Sec 34, NW¼, NE¼, NW¼	Undetermined	A&HS (1989)
19-33 (historical RR camp)	--	T21N, R11E, Sec 2, NW¼, NE¼, NW¼,	Undetermined	A&HS (1989)
A.F. Hoffman house	--	T21N, R11E, Sec 2, NW¼, SW¼, SE¼	Undetermined	GLO (1906)
45KT836 (lithic scatter)	--	T21N, R11E, Sec 11, NW¼, NW¼, NE¼	Undetermined	A&HS (1989)
45KT834 (lithic scatter)	--	T21N, R11E, Sec 12, SW¼, SW¼, NW¼	Undetermined	A&HS (1989)
19-31 (historical camp/dump)	--	T21N, R11E, Sec 13, NE¼, NW¼	Undetermined	A&HS (1990)
19-29 (historical camp)	--	T21N, R11E, Sec 13, NE¼, SW¼, NE¼	Undetermined	A&HS (1990)
Historical road segment	--	west end: T21N, R11E, Sec 13, NW¼, NW¼, NE¼; east end: T21N, R12E, Sec 22,	Undetermined	GLO (1906)

Resource Type	MP	Legal Location	NRHP Status	Reference
Wm. Stevenson homestead	--	T26N, R7E, Sec 4, NW¼, NW¼, SW¼ SE¼, SW¼, NE¼	Undetermined	GLO (1885)
19-28 (historical sawmill)	--	T21N, R12E, Sec 22, NE¼, SW¼, NE¼	Undetermined	A&HS (1990)
19-32 (historical RR stop - Whittier)	--	T21N, R12E, Sec 27, NE¼, NE¼, NE¼	Undetermined	A&HS (1990)
19-30 (historical can dump)	--	T20N, R13E, Sec 6, SE¼, SW¼, NW¼	Undetermined	A&HS (1990)
Historical road/RR grade	--	T20N, R13E, west end: Sec 6, W½, W½; east end: Sec 9, SW¼, NE¼	Undetermined	GLO (1898)
19-27 (historical dump)	--	T20N, R13E, Sec 9, NE¼, SW¼, NW¼	Undetermined	A&HS (1990)
Historical road	--	T20N, R13E, Sec 14, SE¼, SW¼, NE¼	Undetermined	GLO (1898)
Historical irrigation ditch	--	T20N, R13E, Sec 13, NE¼, SE¼, SW¼	Undetermined	GLO (1898)
Historical road	--	T20N, R13E, Sec 13, NW, SW, SE	Undetermined	GLO (1898)
Historical road segment	--	T20N, R14E, west end: Sec 29, NW¼, SE¼, NW¼; east end: Sec 33, SE¼, SE¼, SE¼	Undetermined	GLO (1892)
Historical road	--	T19N, R14E, Sec 1, SE¼, SE¼	Undetermined	GLO (1901)
Historical Snoqualmie Road	--	T19N, R16E, Sec 9, NW¼, SE¼, NE¼	Undetermined	GLO (1882)
Historical road/trail	--	T19N, R17E, Sec 16, SW¼, NE¼, SE¼	Undetermined	GLO (1874)
Historical road/trail	--	T19N, R18E, Sec 21, SW¼, SE¼, SE¼	Undetermined	GLO (1872)
Historical road/trail segment	--	T19N, R18E, Sec 24, N½	Undetermined	GLO (1872)
Historical road/trail	--	T19N, R18E, Sec 35, SW¼, NE¼, NW¼	Undetermined	GLO (1872)
Historical road/trail	--	T18N, R19E, Sec 7, SE¼, SW¼, SW¼	Undetermined	GLO (1868a)
Oregon to British Columbia	--	T17N, R19E, Sec 12, SW¼,	Undetermined	GLO (1868b)

Resource Type	MP	Legal Location	NRHP Status	Reference
Wm. Stevenson homestead	--	T26N, R7E, Sec 4, NW¼, NW¼, SW¼	Undetermined	GLO (1885)
Trail		NE¼, SW¼		
Historical road/trail	--	T17N, R20E, Sec 8, SE¼, SW¼, SW¼	Undetermined	GLO (1868c)
Historical road/trail	--	T17N, R20E, Sec 8, SW¼, SW¼, SE¼	Undetermined	GLO (1868c)
45KT833 (prehistoric quarry)	--	T17N, R20E, Sec 8, SE¼, NE¼, SE¼	Undetermined	A&HS (1989)
45KT832 (lithic scatter)	--	T17N, R20E, Sec 8, NE¼, SE¼, SE¼	Undetermined	A&HS (1989)
Historical road/trail	--	T17N, R20E, Sec 23, NE¼	Undetermined	GLO (1868c)
45KT994 (lithic scatter)	--	T17N, R22E, Sec 30, SW¼, NE¼, SE¼, NW¼	Undetermined	A&HS (1993)
45KT94 (lithic scatter)	--	T17N, R22E, Sec 20 NE¼, SE¼, SE¼	Undetermined	Munsell and Maas (1966b)
45KT654 (lithic scatter)	--	T17N, R22E, Sec 29, SE¼, NW¼, NW¼	Undetermined	URS, Inc. (1986)
45KT93 (lithic scatter)	--	T17N, R22E, Sec 28, NW¼, NW¼, NE¼	Undetermined	Munsell and Maas (1966a)
45KT667 (lithic scatter/quarry)	--	T17N, R22E, Sec 34, SE¼, SE¼, NE¼	Undetermined	URS, Inc. (1986)
45KT973 (lithic scatter)	--	T16N, R22E, Sec 12, NE¼, NE¼, NE¼, SW¼	Undetermined	URS, Inc. (1986)
45KT1012 (lithic scatter)	--	T16N, R22E, Sec 12, SE¼, NW¼, SE¼, SE¼	Undetermined	URS, Inc. (1986)
45KT1011 (lithic scatter)	--	T16N, R22E, Sec 12, SW¼, NE¼, SE¼, SE¼	Undetermined	URS, Inc. (1986)
45KT809	--	T16N, R23E, Sec 6, SE¼, NE¼, NW¼	Undetermined	
45KT576 (lithic scatter)	--	T16N, R23E, Sec 7, SE¼, SE¼, NW¼	Undetermined	Christianson (1984)
Historical road/trail	--	T16N, R23E, Sec 20, NW¼, SE¼, NW¼	Undetermined	GLO (1882)
Historical road/trail	--	T15N, R27E, Sec 3, SW¼, SW¼, SW¼	Undetermined	GLO (1883a)
Road from White Bluffs to big bend of Col. R.	--	T15N, R28E, Sec 18, SE¼, NE¼, NE¼	Undetermined	GLO (1883b)

Resource Type	MP	Legal Location	NRHP Status	Reference
Wm. Stevenson homestead	--	T26N, R7E, Sec 4, NW¼, NW¼, SW¼	Undetermined	GLO (1885)
Richardson Supply Road	--	T15N, R28E, Sec 15, SE¼, NW¼, SW¼	Undetermined	GLO (1883b)
Wagon Road from Col. R. to Eagle Lake	--	T14N, R28E, Sec 1, NE¼, NE¼, SE¼	Undetermined	GLO (1883c)
Historical road/trail	--	T14N, R29E, Sec 18, NW¼, SE¼, NW¼	Undetermined	GLO (1883d)
Historical road/trail	--	T14N, R29E, Sec 27, NE¼, NW¼, SW¼	Undetermined	GLO (1883d)
Historical road/trail	--	T13N, R29E, Sec 3, SE¼, NE¼, SE¼	Undetermined	GLO (1883e)
Historical road/trail	--	T13N, R29E, Sec 11, NW¼, NW¼, NW¼	Undetermined	GLO (1883e)
Historical road/trail	--	T13N, R29E, Sec 11, NW¼, SE¼, SW¼	Undetermined	GLO (1883e)
Historical road/trail	--	T13N, R29E, Sec 14, SE¼, NE¼, NW¼	Undetermined	GLO (1883e)
Historical roads/trails intersection	--	T13N, R29E, Sec 26, NE¼, SE¼	Undetermined	GLO (1883e)
Historical road/trail	--	T13N, R29E, Sec 36, SW¼, SW¼, SW¼	Undetermined	GLO (1883e)
Historical road/trail	--	T12N, R29E, Sec 11, NE¼, NE¼, NE¼	Undetermined	GLO (1878)
Historical road/trail	--	T12N, R29E, Sec 26, SE¼, NE¼, NE¼	Undetermined	GLO (1878)
Historical road/trail	--	T11N, R29E, Sec 24, SE¼, SE¼, NE¼	Undetermined	GLO (1881)
Historical road/trail	--	T11N, R29E, Sec 36, SE¼, NE¼, SE¼	Undetermined	GLO (1881)
NPRR grade	--	T10N, R29E, Sec 24, SE¼, SE¼, NE¼	Undetermined	GLO (1880)
NPRR grade	--	T10N, R29E, Sec 25, SW¼, NE¼, NE¼	Undetermined	GLO (1880)
Historical road/trail	--	T10N, R29E, Sec 25, SE¼, NE¼, NE¼	Undetermined	GLO (1880)
Historical road/trail	--	T9N, R30E, Sec 9, NE¼, SE¼, NE¼	Undetermined	GLO (1866)

Resource Type	MP	Legal Location	NRHP Status	Reference
Wm. Stevenson homestead	--	T26N, R7E, Sec 4, NW¼, NW¼, SW¼	Undetermined	GLO (1885)
Historical road/trail	--	T9N, R30E, Sec 15, N½, SE¼, SE¼	Undetermined	GLO (1866)
Historical road/trail	--	T9N, R30E, Sec 27, SE¼, NE¼, SE¼	Undetermined	GLO (1866)

In 1984, researchers conducted a reconnaissance of the North Fork Snoqualmie River Municipal Water Supply Project (Kennedy and Larson 1984). This survey included an area near North Bend, in the vicinity of Tokul Creek and Segment 15A of the current study. One prehistoric site was recorded at the confluence of Tokul Creek and the Snoqualmie River (Kennedy and Larson 1984:95), which lies well beyond the pipeline research corridor.

West Cascades

Segment 19 contains 20 previously surveyed areas. Welch conducted the first of these studies in 1981 in conjunction with a State of Washington Fire Service training center access road project (Welch 1981). Excavation produced a wooden net mender and one basalt flake, but additional shovel tests contained no other cultural materials. Based on soil profiles, Welch concluded that the site had been previously disturbed (Welch 1981:3). The second assessment yielded numerous historical materials associated with the Chicago, Milwaukee, St. Paul & Pacific (CMStP&P) Railroad. Surveyors recorded two sites, 45KI418 and the Snoqualmie Tunnel (Gough 1989).

The U.S. Forest Service has conducted numerous reconnaissances within the boundaries of the Mt. Baker-Snoqualmie National Forest. Archaeologists conducted seven timber sale surveys in the Alice Creek, South Fork, and Ollalie Creek areas, and the North Bend district of the Forest. The surveyors noted two sites associated with early logging, the Harris Creek Trestle and Minot Spur Debris Scatter, and two additional sites affiliated with early transportation, segments of the Snoqualmie Wagon Road and the Tinkham Wagon and puncheon (Hollenbeck 1991; Johnson 1993; Peter 1979; Slaught 1994; Waggoner 1979, 1985; White 1978, 1982).

Proposed improvements at Ski Acres, water and sewer system upgrades, development of a trials bicycle event area, and a river bank stabilization project at the Tinkham Campground prompted eight surveys. The Forest Service did not discover any previously unidentified resources (Hollenbeck 1992, 1995; Waggoner 1983a, 1983b, 1986; White 1979, 1981, 1983).

Additional Mt. Baker-Snoqualmie National Forest studies included an historical development plan for the North Bend Ranger District and a reconnaissance of the Alpine Lakes Wilderness. The historical plan codified previously recorded sites, including segments of the Snoqualmie Wagon Road, for a thematic

study of early transportation in the area. The reconnaissance identified Camp Mason, originally known as Bide-a-Wee, established by homesteader Charles Beard as a store and stop-over point for early travellers over the Pass. A Forest Service check-up on the site's condition in 1990 identified a water transmission line as the only extant remains (Carter 1978; Cohn 1990; North Bend Tickler File n.d.).

East Cascades

Archaeologists performed four assessments in the vicinity of Snoqualmie Pass at the juncture of Segments 28 and 29. Rice and Holstine (1986) surveyed SR 906, the former Snoqualmie Pass Highway before the construction of I-90, from the summit of the Pass to Hyak. Robinson (1987) examined the ROW of I-90 adjacent to SR 906. The Snoqualmie Pass Sewer District contracted a study of a parcel of land just south of Hyak, approximately one-half-mile south of the highway survey area discussed above (Northwest Archaeological Associates, Inc. 1992). None of these studies recorded any prehistoric or historic cultural resources.

The fourth survey conducted in this area examined existing transmission line corridors. The Wanapum-to-Hyak and Hyak-to-Vantage Lines required upgrades from single poles to double H-frame towers (DePuydt 1990a, 1990b). The pipeline follows the transmission line ROW from Segment 29 through 31, where DePuydt noted five prehistoric sites (45KT835, 45KT478, 45KT316, 45KT836, 45KT834) (DePuydt 1990a:34, 1990b:35).

In Segment 31, Rice (1986) assessed an area at the confluence of Cabin Creek and the Yakima River for a proposed railroad connection between Burlington Northern Railroad and the former CMStP&P ROW. This study produced no cultural resources.

Western Columbia Basin

Segment 36 contains two archaeological assessments. Welch and Daugherty (1989) surveyed potential quarry and flume sites for Grant County Public Utility District No. 2, but recorded no significant prehistoric or historic materials. In 1987, URS Corporation surveyed 12,000 of 63,000 acres for the proposed YTC expansion (Benson et al. 1987). Five survey parcels containing eleven sites lie within the pipeline research corridor. These sites range in age from 7,000 to 200 BP, and include prehistoric quarries and camps, and historic-period homesteads and railroad maintenance dumps, which date to after 200 BP (Benson et al. 1987:v).

Columbia Basin Flat

In Segment 40, southwest of Royal City, the Bonneville Power Administration's Wahluke Tap Transmission Line crosses the pipeline ROW. Gleeson performed two cultural resources assessments of the transmission corridor during the mid-1980s. These studies yielded no significant artifacts (Gleeson 1983a, 1983b).

During the late 1970s, the Bureau of Reclamation proposed creating a fish and wildlife refuge

within the Scooteney Reservoir area. An archaeologist and two historians surveyed the perimeter of the 40-square-mile area. Their transect crosses the pipeline ROW approximately two miles south of Eagle Lakes. The surveyors noted several rock cairns during the course of the study, although none are located within the pipeline research corridor (Huelsbeck et al. 1977:5).

Archaeologists performed two surveys near the eastern terminus of the proposed pipeline. Masten (1984) examined areas adjacent to Highway 395, between Pasco and Eltopia, for cultural resources. Another survey followed SR 12 from Highway 395 to the bank of the Snake River (Rice 1982). Neither study recorded any significant cultural materials.